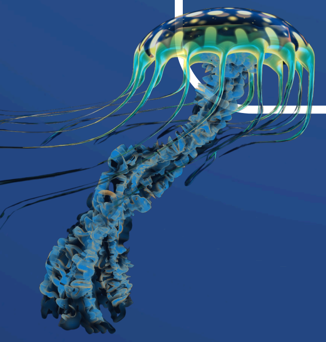
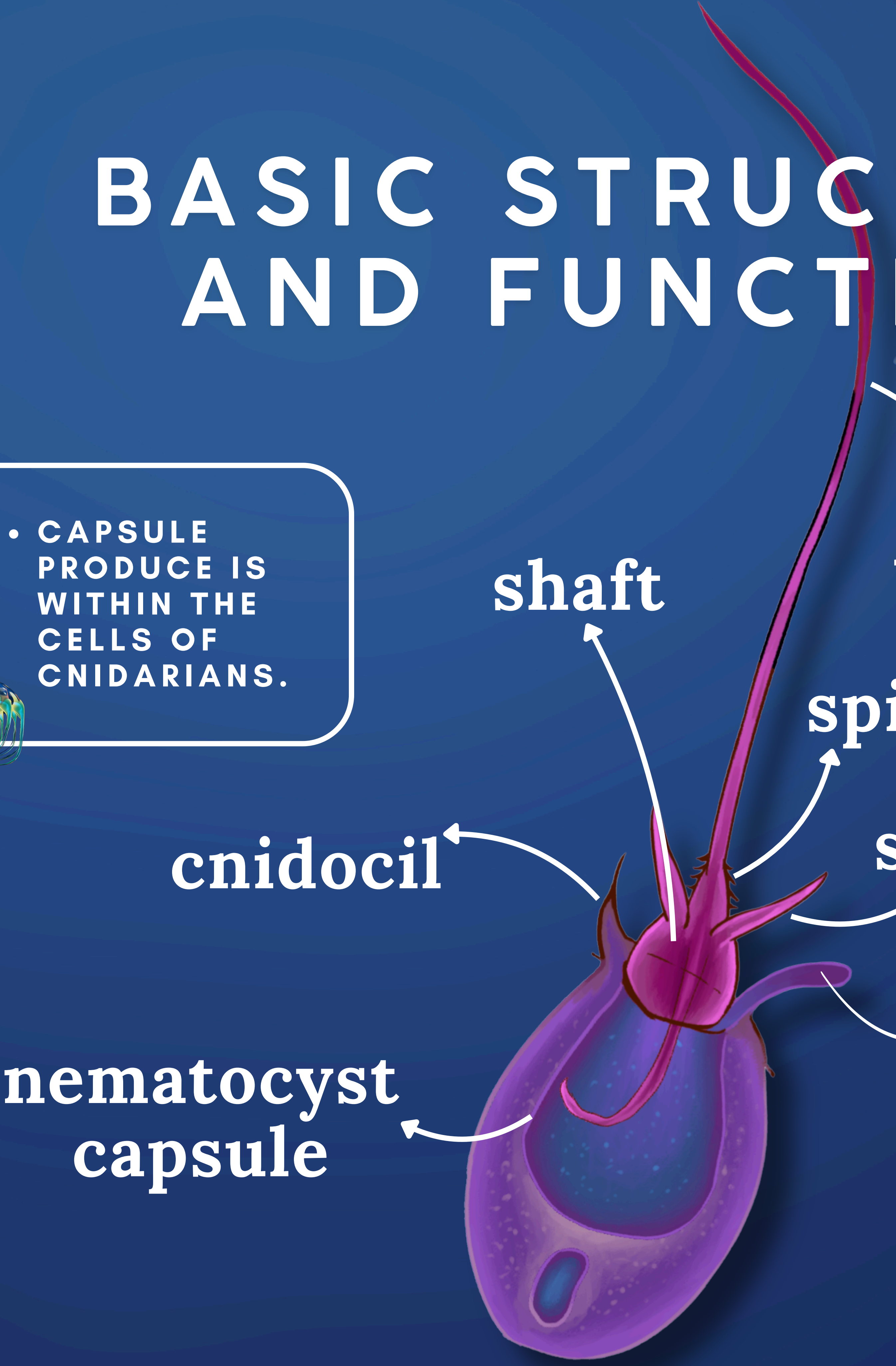
# DIVERSITY OF NEMATOCYSTS IN CNIDARIA

## BASIC TAXONOMY MANUAL ON NEMATOCYSTS

# BASIC STRUCTURE AND FUNCTION



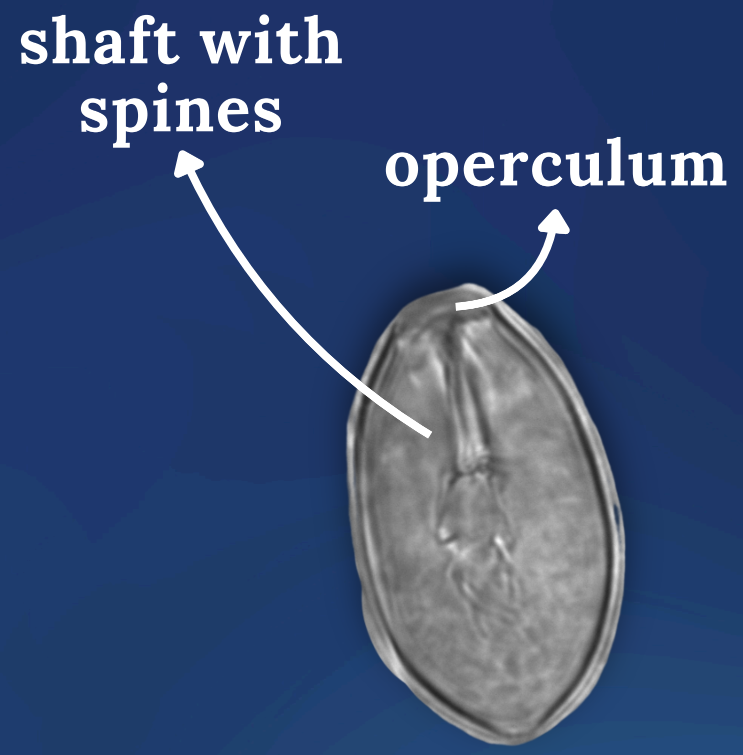
- CAPSULE PRODUCE IS WITHIN THE CELLS OF CNIDARIANS.



tubule
shaft
spines
cnidocil
stylet
operculum
nematocyst capsule

Capsule after discharge

- ACCORDING TO THEIR MORPHOLOGY, THERE ARE ABOUT 26 DIFFERENT TYPES.



shaft with spines
operculum

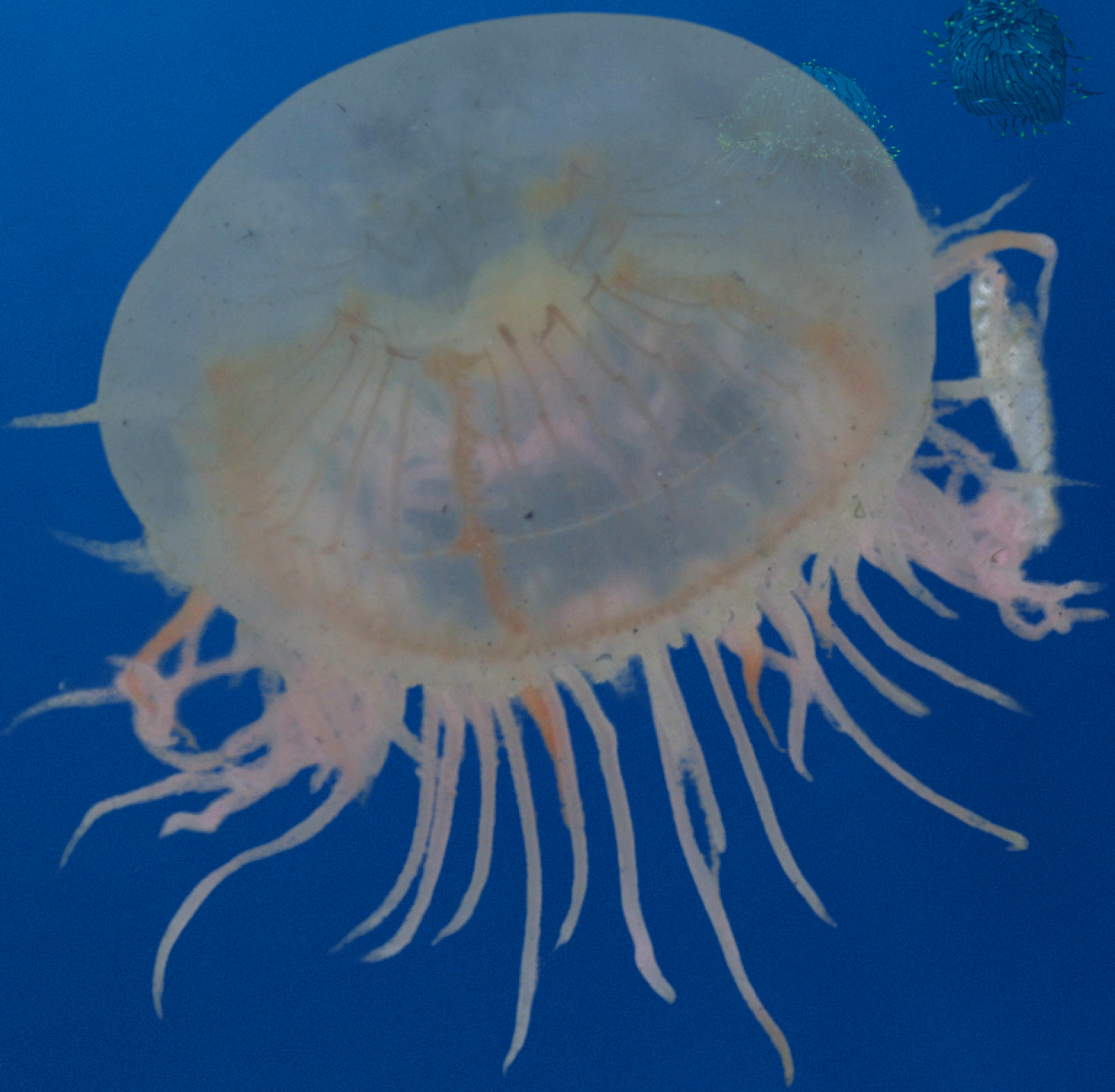
Undischarged capsule with coiled tubule and invaginated stylets

**Image 1**

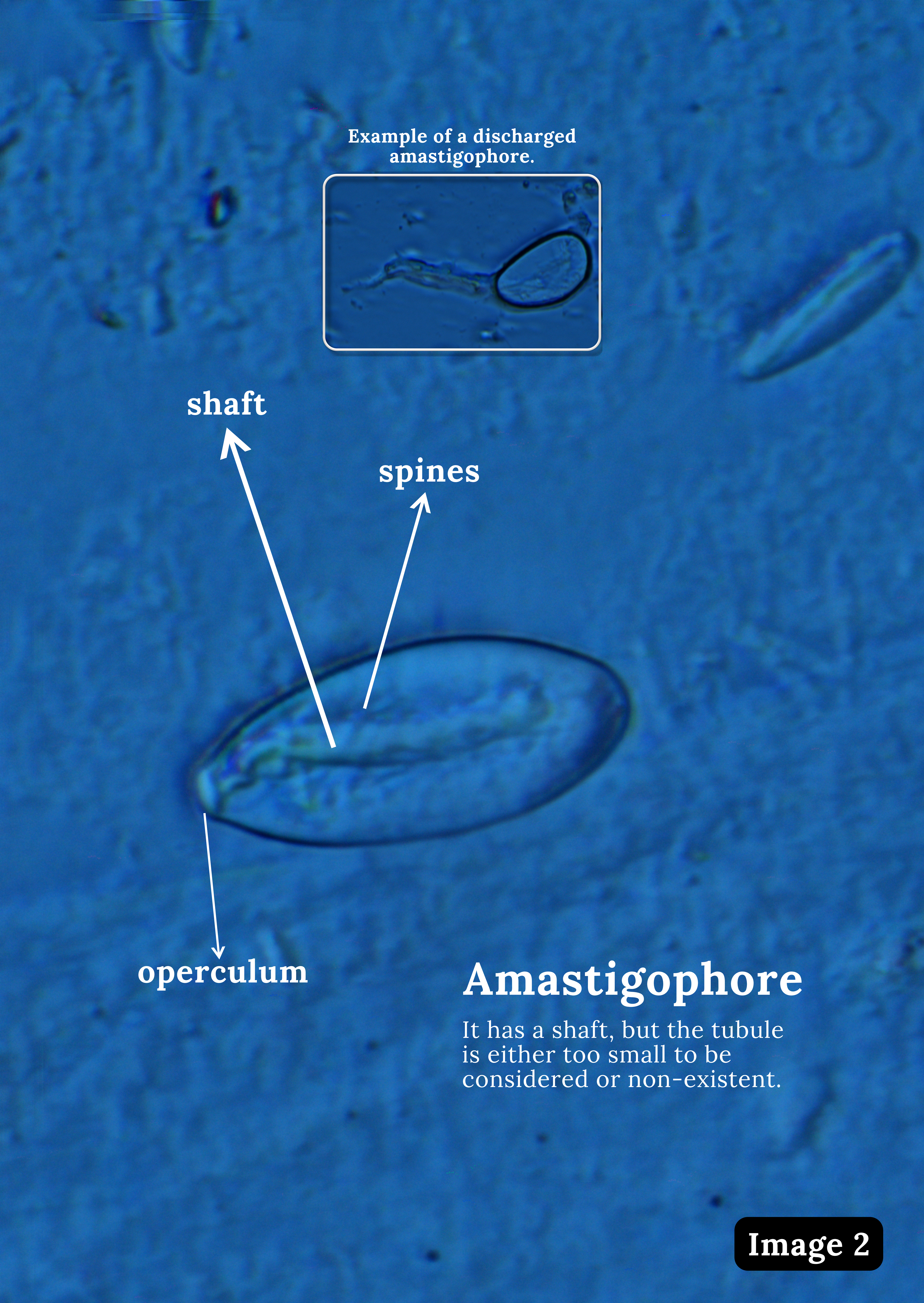
- ESSENTIAL FUNCTIONS INCLUDE DEFENSE, PREY CAPTURE, ANCHORAGE, AND LOCOMOTION IN SOME CASES.

# SPECIES:

# *Olindias sambaquiensis*



COMMONLY KNOWN AS THE “LITTLE WATCH JELLYFISH”


Example of a discharged amastigophore.

shaft
spines
operculum

## Amastigophore

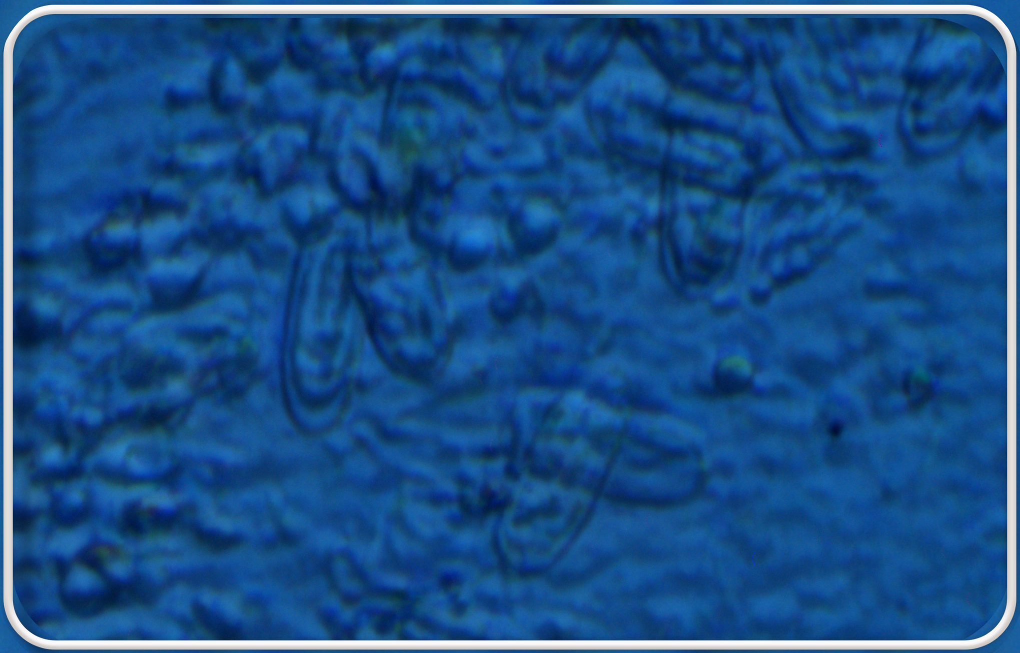
It has a shaft, but the tubule is either too small to be considered or non-existent.

**Image 2**

# Isorhizas

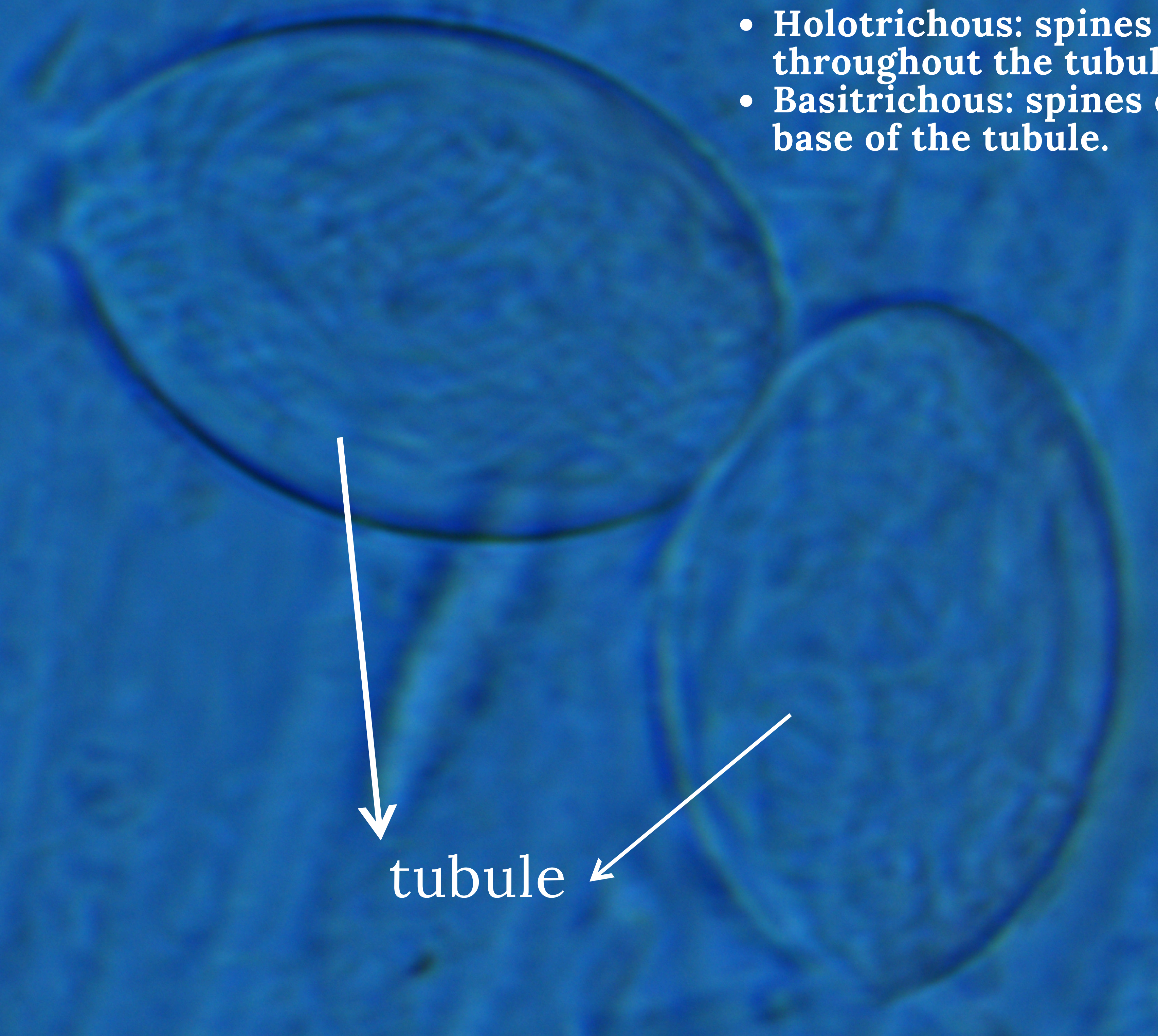
**Type of nematocyst that has a tubule with a uniform diameter and no visible shaft.**

## Other types:



There are three main categories:

- Atrichous: no visible spines on the tubule.
- Holotrichous: spines developed throughout the tubule.
- Basitrichous: spines developed at the base of the tubule.



The undischarged capsule resembles a fingerprint!

**Image 3**

## SPECIES:

# *Cassiopea andromeda*

**COMMONLY REFERRED TO AS THE “UPSIDE-DOWN JELLYFISH”**

# Rhopaloids

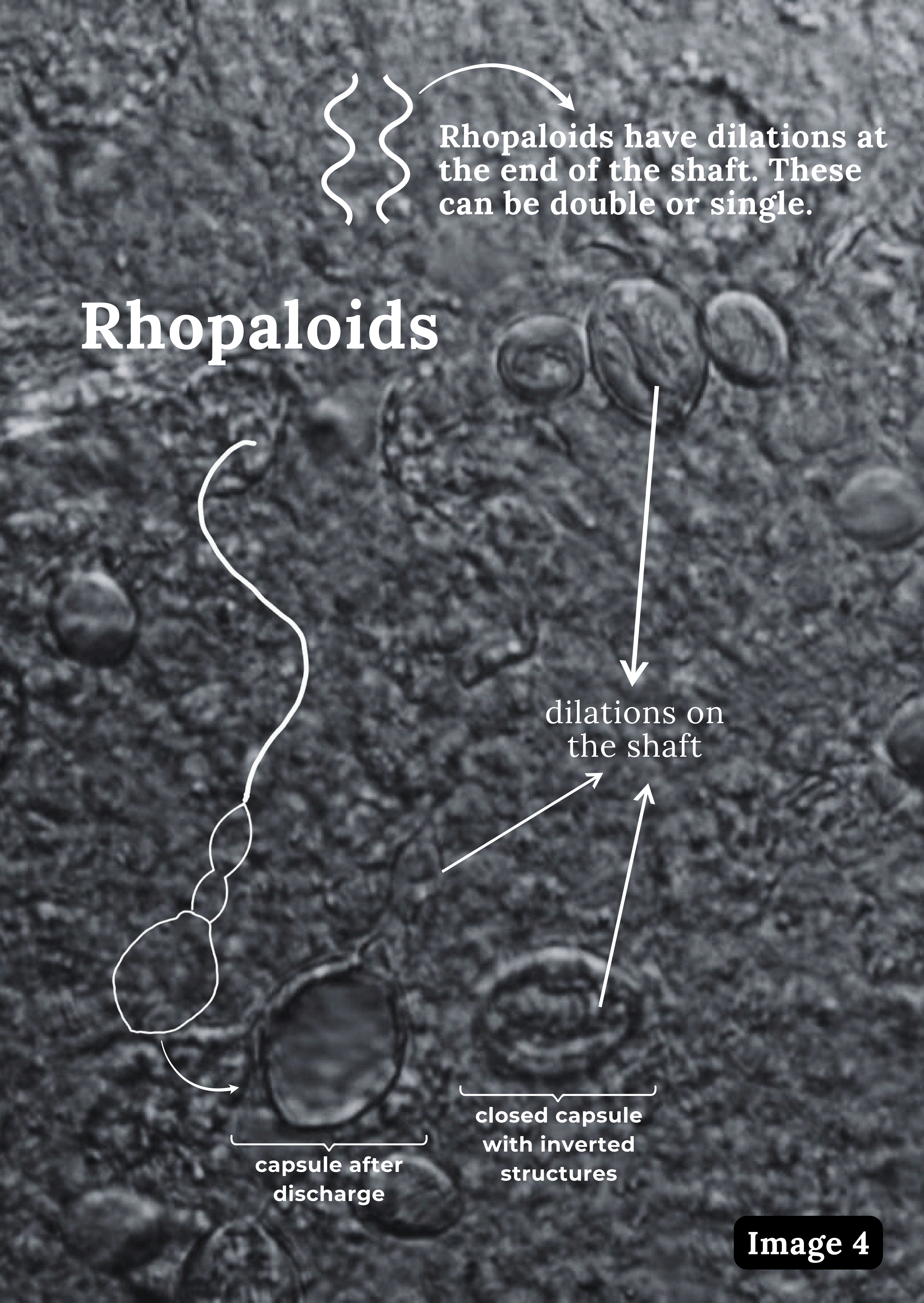


**Image 4**

Rhopaloids have dilations at the end of the shaft. These can be double or single.

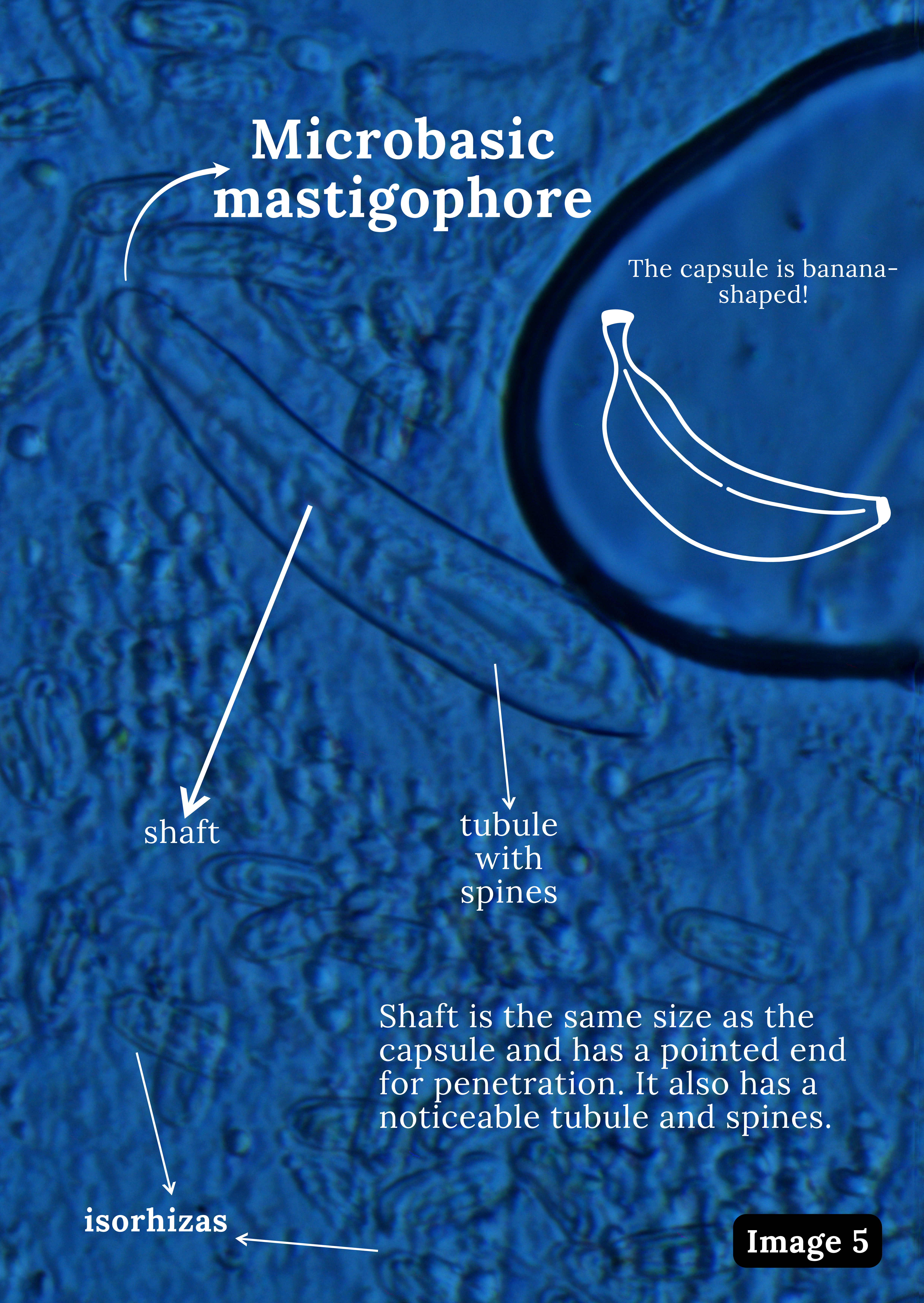
dilations on the shaft
capsule after discharge
closed capsule with inverted structures

# SPECIES:

# *Chiropsalmus quadrumanus*

POPULARLY KNOWN AS THE
"FOUR-HANDED BOX
JELLYFISH"

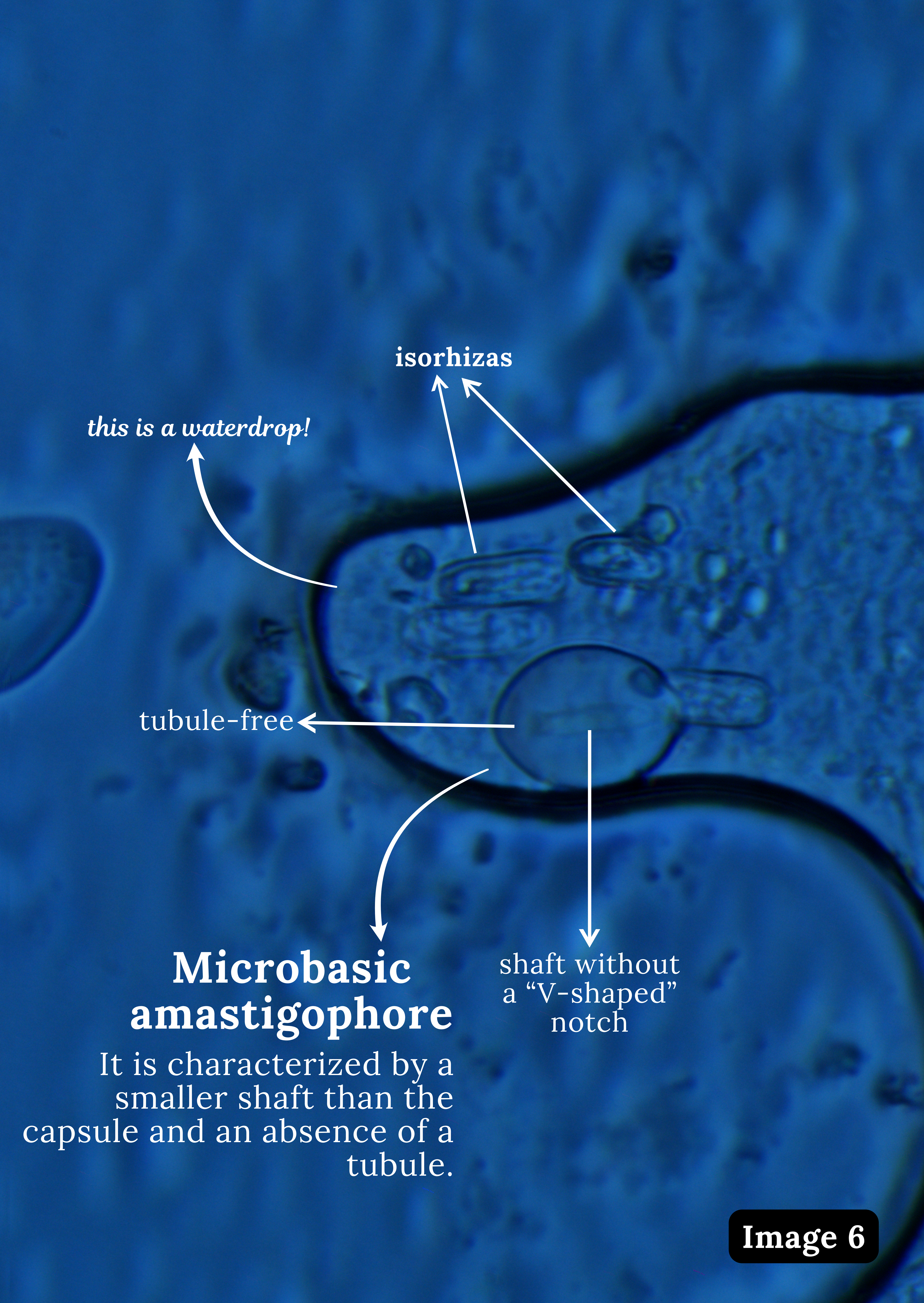
# Microbasic mastigophore


shaft
tubule with spines
isorhizas

The capsule is banana-shaped!

Shaft is the same size as the capsule and has a pointed end for penetration. It also has a noticeable tubule and spines.

**Image 5**


isorhizas
*this is a waterdrop!*
tubule-free
shaft without a “V-shaped” notch

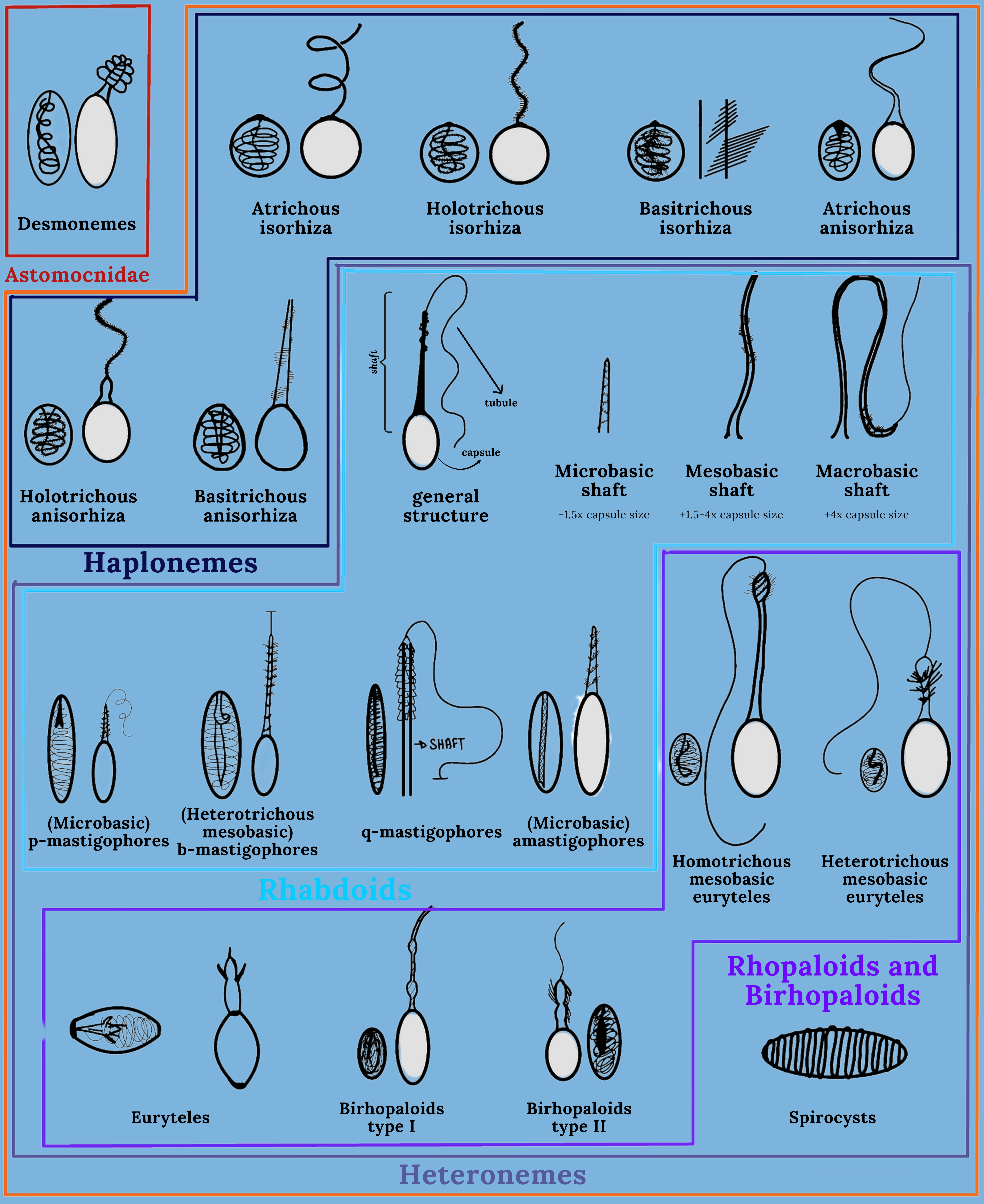
## Microbasic amastigophore

It is characterized by a smaller shaft than the capsule and an absence of a tubule.

**Image 6**

# BASIC CLASSIFICATION

- 🟥 Astomocnidae
- ⬛ Haplonemes
- 🟦 Rhabdoids
- 🟪 Rhopaloids and Birhopaloids
- 🟦 Heteronemes
- 🟧 Stomocnidae



**Desmonemes**

**Astomocnidae**

**Atrichous isorhiza**

**Holotrichous isorhiza**

**Basitrichous isorhiza**

**Atrichous anisorhiza**

**Holotrichous anisorhiza**

**Basitrichous anisorhiza**

**Haplonemes**

**general structure**

**Microbasic shaft**

-1.5x capsule size

**Mesobasic shaft**

+1.5-4x capsule size

**Macrobasic shaft**

+4x capsule size

**(Microbasic) p-mastigophores**

**(Heterotrichous mesobasic) b-mastigophores**

**q-mastigophores**

**(Microbasic) amastigophores**

**Rhabdoids**

**Homotrichous mesobasic euryteles**

**Heterotrichous mesobasic euryteles**

**Rhopaloids and Birhopaloids**

**Euryteles**

**Birhopaloids type I**

**Birhopaloids type II**

**Spirocysts**

**Heteronemes**

## Stomocnidae

**ASTOMOCNIDAE: tubule closed at tip and either is adhesive or acts as a lasso to entangle prey.**

**STOMOCNIDAE: open-ended tubule that may or may not have a shaft; mainly penetrant.**
Images 1, 2, 3, 4, 5 and 6

**HAPLONEMES: tubule lacking a well-defined shaft visible inside the undischarged capsule.**
Image 3

**HETERONEMES: tubule with a prominent and visible shaft inside the undischarged capsule.**
Images 1, 2, 4, 5 and 6

**RHABDOIDS: cylindrical shaft of constant diameter.**
Images 1, 5 and 6

**RHOPALOIDS AND BIRHOPALOIDS: with dilation in some regions of the shaft, it can be either single or double.**
Image 4

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